Communicable Disease UPDATE

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Bioterrorism Questions and Answers

Q. What is bioterrorism?
A. Bioterrorism is the intentional use (or threatened use) of biological agents to hurt people, create fear, and/or disrupt society.

Q. Have any bioterrorism incidents occurred in Massachusetts?
A. There have been many hoaxes, but no evidence of any intentional release of dangerous microbes. To cause infection and to make many people sick, a person would have to have access to specialized equipment and processes. It is difficult to successfully disperse a biological agent into the air in a way that could harm many people.

Q. Should I keep a supply of antibiotics in my home in case there is a biological attack?
A. No. Antibiotics can be harmful if not used appropriately and can actually mask symptoms of disease if incorrectly used. In addition, many strains of bacteria are resistant to some antibiotics. Bacteria that could be used in a terrorist attack may be resistant to specific antibiotics, thereby making the antibiotics useless. There is a current stockpile of antibiotics for two million people and an effective way to deliver them to wherever they are needed. The most effective antibiotics can be made available when needed.

Q. What is anthrax?
A. Anthrax is an infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. The bacteria can infect all warm-blooded animals including man.

Q. How common is anthrax and who can get it?
A. Anthrax is most common in agricultural regions of the world where it occurs in animals. In humans, the naturally occurring disease is usually caused by an occupational exposure to infected animals or their products. Anthrax has not been reported in Massachusetts in over 30 years.

Q. How is anthrax spread?
A. A person may become infected with anthrax by inhaling anthrax spores; by infecting cuts or abrasions
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Air Disinfection: Lessons for the Defense Against Bioterrorism

Air disinfection has been used as a public health strategy against natural airborne infection for many decades. The rationale is to protect workers and others in environments such as hospitals, jails, and homeless shelters, from known, and unsuspected infectious persons. Is that experience applicable to the current bioterrorism threat? It should be, given that anthrax and smallpox are airborne pathogens and have properties in common with other, similar organisms. The applicability is based on considerable public health experience using air disinfection for tuberculosis and for respiratory viruses, such as measles and influenza.

Three technologies are in common use to disinfect air. Mechanical ventilation systems in public buildings dilute and remove infectious particles, although terrorists could also use ventilation ducts as an efficient way to deliver pathogens throughout buildings. However, building ventilation is designed for the comfort of occupants, not to prevent airborne infections. The protection provided is limited by the numbers of possible air changes because of inherent constraints of design, noise, cost, and discomfort.

Air filtration can remove essentially all respiratory pathogens suspended in air that passes through special high-efficiency filters, but getting most of the air in a room through the filter is difficult, especially in large, incompletely mixed occupied spaces. Filtration adds to airflow resistance, increasing the cost of ventilation, and increasing the noise and discomfort of room occupants. Special filters can be used in ventilation ducts, where they can reduce the recirculation of pathogens within
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Inside

Epidemiology

Reducing Unneccessary Antibiotics for Children - REACH

REACH Mass is a community education initiative to promote judicious antibiotic use in children and to reduce the prevalence of antibiotic-resistant bacteria. REACH Mass is a collaboration of Harvard Medical School, the Massachusetts Department of Public Health, Harvard Pilgrim Health Care, the Massachusetts Division of Medical Assistance, Tufts Health Plan and Blue Cross and Blue Shield of Massachusetts, Inc. Funded by the Agency for Healthcare Research and Quality, REACH Mass has the approval of the Centers for Disease Control and Prevention and the Massachusetts Chapter of the American Academy of Pediatrics.
REACH Mass has developed a variety of educational materials regarding judicious antibiotic use. Specifically, in collaboration with pediatric clinicians in the 8 intervention communities, REACH Mass is:

- Distributing materials to parents, local day care providers and other selected community organizations.
- Offering pediatric clinicians CME programs that focus on the local problems of antibiotic resistance.
- Providing data to clinicians on current antibiotic prescribing patterns in their communities.

Outcome measures of the study include the incidence of both responsive and resistant bacterial infections, carriage of resistant organisms, as well as rates of antibiotic use.

At the present time, REACH educational materials are available only to the study communities. However, for general information about the Project or referral to other resources, please call the REACH toll-free number at 1-866-281-8906.

For all your influenza information needs

The Massachusetts Department of Public Health has established an influenza information web page with information and links to sites on flu vaccine availability, flu guidelines and recommendations, adult pneumococcal disease and vaccine, and influenza pandemic preparedness planning. You can access this web site by going to www.state.ma.us/dph and clicking on the *Influenza Information* icon.

BT Questions and Answers continued from page one
caused by handling objects that are contaminated by spores; or by swallowing spores by eating undercooked meat from diseased animals. Anthrax is NOT spread person to person.

Q. What are the symptoms of anthrax?
A. The symptoms vary depending upon the type of exposure.
Cutaneous: Most anthrax infections occur when the bacterium enters the skin. A boil-like lump appears which eventually forms an ulcer with a black center. A swelling of the lymph glands may also occur.
Inhalation: Initial symptoms may resemble influenza. After several days, the symptoms may progress to thos of severe breathing problems and pneumonia. Inhalation anthrax usually results in death in several days after onset of symptoms, if not treated with antibiotics.
Intestinal: The intestinal form of anthrax may follow the consumption of contaminated meat and is characterized by loss of appetite, nausea, vomiting, fever; then abdominal pain, vomiting of blood, and severe diarrhea.

Q. How soon after being infected do symptoms appear?
A. Symptoms of disease usually occur within seven days but occasionally symptoms occur longer after exposure, even up to 45-60 days.

Q. How is anthrax diagnosed?
A. Anthrax is usually diagnosed by identifying the bacteria in blood, skin lesions, or respiratory secretions.

Q. What is the treatment for exposure to anthrax?
A. Ciprofloxacin and doxycycline, given orally for 60 days, are the preferred drugs for postexposure prophylaxis to prevent inhalation anthrax from developing after known exposure.

Q. Is there a vaccine to prevent anthrax?
A. The anthrax vaccine licensed for human use in the United States is a sterile filtrate of cultures of *B. anthracis*. The vaccine is available for people in high-risk occupations, such as military personnel or people who handle animal hides. Anthrax vaccine is not routinely recommended for the general population.

Q. What about smallpox? Should I be immunized?
A. There have been no cases of smallpox in the world in over 20 years. The only two places where the virus is known to exist are in secure facilities in the United States and Russia. There is currently a supply of 15 million doses of smallpox vaccine that could be used to prevent spread of virus should there be a release. This type of use of vaccine was how smallpox was eliminated. Smallpox vaccine is not recommended for routine use because it is not sufficiently available and can cause side effects that would only be tolerable if there was a chance of exposure.

Massachusetts Group Recognized for Excellence in Immunization

The work of the Massachusetts Joint Committee on Adolescent Hepatitis B Immunization of the Massachusetts Chapter of the American Academy of Pediatrics (MCAAP) Immunization Initiative and the Massachusetts Immunization Action Partnership (MIAP) was recognized by the National Partnership for Immunization (NPI) at the 2001 Excellence in Immunization Awards Ceremony held in Washington D.C. in August. Representing the Joint Committee, Hadassa Kubat, D.Sc., accepted the award from Dr. Walter Orenstein, Director, National Immunization Program, CDC, and Anita Boles, Executive Director, National Healthy Mothers, Healthy Babies Coalition.

The purpose of the Joint Committee is to promote catch-up immunization of all adolescent 6th through 12th grade students in Massachusetts with the hepatitis B vaccine. Organizations that participate include the MCAAP Immunization Initiative, Massachusetts Chapters of the School Nurses Association, the Public Health Nurses Association, the National Association of Pediatric Nurse Practitioners (NAPNAP), the School Physicians Association, the Health Officers Association, the Association of School Superintendents, and the Parent Teachers Association (PTA), as well as Rotary Clubs, private schools, the Massachusetts Department of Public Health, the Division of Medical Assistance (Medicaid), GlaxoSmithKline, and Merck. The program was supported by educational grants from the American Liver Foundation, GlaxoSmithKline and Merck. Coalition activities have included: advocacy, mailings to the schools, publication of articles in various newsletters, technical assistance, and development and dissemination of educational materials and tools.

During 1996-2000 more than 350 schools have implemented this program, and hepatitis B vaccine coverage rates of 7th graders have increased from 30% in 1996 to 81% in 2000, while the number of reported cases of hepatitis B among adolescents in Massachusetts has decreased over the same period.

For more information, contact Hadassa Kubat, Project Coordinator, MCAAP Immunization Initiative, at (781) 895-9850.

Change In The Adult Hepatitis B Vaccine Distribution Program

In an effort to streamline the adult hepatitis B vaccine distribution system, the Massachusetts Department of Public Health (MDPH) will begin to distribute only Engerix-B® adult hepatitis B vaccine (Glaxo SmithKline, 20 mcg/1.0 ml) for all programs as soon as supplies of Recombivax HB® adult hepatitis B vaccine (Merck, 10 mcg/1.0 ml) are exhausted. This formulation will be supplied in single dose vials.

The MDPH supplies adult formulation hepatitis B vaccine to: all public provider sites (i.e. local boards of health, community health centers, etc.) for immunization of high-risk adults; colleges for immunization of students over 19 years of age who are to be vaccinated due to the college hepatitis B immunization requirements; and boards of health and state agencies for the immunization of high-risk public safety workers.

Recommendations for Administration of Engerix-B® in Adults

- The correct adult dose of Engerix-B® is 20 mcg or 1.0 ml. The usual dose of hepatitis B vaccine for adults (over 19 years of age) is always 1.0 ml, regardless of the brand being used (the only exception is the special dosages used for dialysis patients and other immunosuppressed adults).

Note: In the past, when hepatitis B formulations have changed, the MDPH has received reports of providers doubling or halving doses. Please remember it is always essential to check the package insert of the product you are using to ensure administration of the correct dose of vaccine

If you have supplies of Recombivax HB®, please use up your existing stock. Recombivax HB® and Engerix-B® are interchangeable, so patients who have started the series with Recombivax HB® can complete the series with Engerix-B®.

If you have any questions regarding this change, please contact the MDPH Vaccine Management Unit at 617-983-6828.

Immunization Update 2002 Workshops

Watch for information coming in the mail during January announcing the *Immunization Update 2002* workshops for physicians, nurses, medical assistants, and other individuals involved with the handling and administration of vaccines. The workshops will be held at several locations throughout the state. There are three topics scheduled for presentation. The three-hour program is **free** and a continental breakfast is provided prior to registration that morning.

STD

The Internet as an Emerging Challenge and Opportunity for STD Prevention

Any time there is a profound change in some aspect of our lives, the impact can have unpredicted effects. The Internet is creating a host of new ways of doing business. It is also creating new challenges and opportunities for STD prevention.

In San Francisco, in 1999, the health department investigated seven cases of infectious syphilis among men who have sex with men (MSM). The men had found sex partners through a website and one or more of the partners were infected with syphilis. The investigation was difficult because no one knew the names of their partners. They only knew their e-mail or website names. The Internet service provider would not release the names of the individuals, citing their responsibility to protect the confidentiality of customers

Since that time, other Internet-related cases of STD have been reported from across the country, including Massachusetts. Cases have occurred in people of many racial, ethnic, and socio-economic groups; heterosexual, homosexual and bisexual. Some surveys have shown that Internet-related cases are more likely to be male, more likely to be MSM, and more likely to engage in higher-risk behaviors than people who do not use the Internet to find sex partners.

There are significant implications of this phenomenon. The concept of "socio-geographic space" has been at the heart of STD epidemiology. People find their sex partners close to where they live and/or work, and people seek partners who are similar to themselves in social characteristics. Use of the Internet to find sex partners is changing this. Often, the only commonality is a visit to the same website. People from different population groups are more likely to find each other through a website than through usual daily travel. Indeed, data show that people from cities a continent away from each other, or from different nations, are connecting through websites or e-mail. Partner choices are broader and social networks are more diverse as a result. Bringing people from different areas together also facilitates the spread of resistant or new strains of microorganisms into other areas.

To meet the challenges of electronic partnering, prevention programs need to improve understanding of the Internet and its capacities among staff. More intensive and collaborative investigations need to be initiated. However, there are opportunities as well. Programs can use the Internet for health education. The power of the Internet can be used to promote healthier behaviors to those already on-line. Adjustment to the new reality of cyber-STD's will require both reactive and proactive use of the Internet.

Measuring Pelvic Inflammatory Disease Surveillance

Surveillance for pelvic inflammatory disease (PID) is affected by four major constraints: difficulty of accurate diagnosis; broad clinical spectrum; diagnosis in a wide variety of clinical settings; and, need for difficult-to-obtain microbiologic data to determine etiology. Administrative data sets contain a variety of data that might be useful for conducting surveillance for pelvic inflammatory disease (PID).

An evaluation was conducted in a large multi-specialty group practice that uses a diagnostic code system in automated outpatient medical records. There were two codes consistent with PID within the system ("unspecified inflammatory disease of pelvic organs and tissues" and "salpingitis and oophoritis"). There were 1,051 patients identified with these codes between 1995 and 1997. A random sample of 215 of these had clinical data abstracted after records were stripped of personal identifiers. The first encounter for each patient was reviewed.

The 1996 Centers for Disease Control and Prevention PID surveillance case definition was used:

All of the following must be present for this case definition:

- Lower abdominal pain
- Lower abdominal tenderness
- Tenderness with motion of the cervix
- Adnexial tenderness

In addition, at least one of the following findings must also be present:

- Meets the surveillance case definition of CT or GC infection
- Temperature greater than 100.4° F
- Leukocytosis greater than 10,000 WBC cells/mm3
- Purulent material in the peritoneal cavity obtained by culdocentesis or laparoscopy
- Pelvic abscess or inflammatory complex detected by bimanual exam or by sonography
- Patient is a sexual contact of a person known to have CT or GC

Only 38 of the 215 (17.7%) cases met the CDC surveillance case definition for PID. All met clinical criteria. The additional data that allowed cases to meet the surveillance case definition were quite variable. The only statistically significant additional findings came as a result of having a CBC or ultrasound done. We concluded that the administrative data could not provide sufficient specificity for the CDC surveillance criteria. Therefore, such data were of limited use for PID surveillance.

You Be The Epi

A 16-year-old male from a West African country arrived in Massachusetts as a refugee. His family had fled his country of origin in 1998 to a neighboring country. Eligible for the Department's Refugee Health Assessment Program (RHAP), he underwent the standard 2-visit evaluation. His history was notable for complaints of cough, fever, and headache for a few days. In addition, he noted an itchy rash on his extremities. He reported having had malaria in the past. His family reported that he had received some immunization as an infant, but had no documentation. He did not have a history of allergies.

Physical examination revealed a well-nourished, well-developed adolescent. Notable findings included small pustules around his neck and in the groin area. Also, he had excoriated papules on his distal extremities. The remainder of his exam was essentially normal. Laboratory studies included microscopy of a single stool specimen for ova and parasites (O & P) and a CBC. He was treated for pustulosis and scabies with oral cephelexin and topical permethrin.

His white blood cell count was 6.0 with 14% eosinophils, for an absolute eosinophil count of 840 (normal <350). His urinalysis revealed no blood or inflammatory cells. His O & P revealed hookworm infection. At his follow-up visit, he was treated with a single oral dose of 500 mg of mebendazole. He was told to have follow-up for his eosinophilia in primary care, after the treatment for hookworm.

Once established in primary care, further studies were done. Repeat CBC revealed an absolute eosinophil count of 684, still high enough to warrant further investigation. Three additional O & P results revealed only non-pathogenic parasites, *Blastocystis hominis*, and *Entamoeba hartmanni*. The clinician ordered serologic testing for antibodies against *Strongyloides steracalis* and *Schistosoma spp*. These tests were both negative. Lastly, given the patient's geographic origins, the clinician ordered serology for anti-filarial antibodies.

Refugees and immigrants come to the U.S. with a number of common health conditions. Some of these conditions (like dental caries, anemia, and diabetes) are quite familiar to U.S. clinicians, but other health conditions are more specific to geographic origins. Examples include intestinal parasites and other infectious diseases that are not prevalent in the U.S. Health screening of refugees and immigrants usually includes complete blood counts that, in addition to anemia, may reveal high levels of blood eosinophilia, defined as $\geq$ 350 per µl.

The filaria IgG antibody level was nearly three times the upper limit of normal. With this result, the clinician referred the patient for consultation with a tropical medicine specialist. The specialist reordered the serologies for filaria, *Schistosoma* and *Strongyloides* through research laboratories at the NIH and CDC. The serology for *Schistosoma* remained negative; however the *Strongyloides* titer was positive. As treatment for *Strongyloides* is relatively simple, requiring just 1-2 days of oral ivermectin, the clinician prescribed treatment. The filarial serology also was reactive for antibodies against *Onchocerca volvulus*. He then underwent opthalmological examination and skin biopsy to determine the best course of treatment.

As this case illustrates, following a focused evaluation tailored to the patient's specific history can facilitate work-up of eosinophilia. In this case, the patient came from a part of the world with endemic onchocerciasis, other filarial diseases, strongyloidiasis, and schistosomiasis. Evaluation for these infectious etiologies is a reasonable first step before proceeding to other possible etiologies. Typically with parasitic diseases, eosinophilia results from tissue-invasive parasites, not those for which infection is confined to the lumen of the gut. In this case, hookworm combined with scabies might have been enough to have caused eosinophilia; however levels did not drop after treatment. He also did not have any evidence of allergic or atopic diseases, or medication use that might be associated with eosinophilia. Had investigation of common infectious etiologies been unrevealing, further evaluation would have been needed to rule out autoimmune, neoplastic, and other conditions that can produce eosinophilia.

Onchocerciasis is the disease known as "River Blindness." It is caused by the nematode *volvulus*. The disease affects the skin and subcutaneous tissue, lymphatics, and eyes. Simulium black flies transmit larvae through bites. After 6-12 months, subcutaneous nodules form as the adult worms mature. Subsequently, microfiliariae are produced and migrate in the tissues. This may cause chronic, diffuse pruritus itch. Over years, skin can become thickened with pigmentary changes. Infiltration of the eye, and even the optic nerve, can occur and cause photophobia and blindness if untreated. Treatment entails a single dose of ivermectin, which , however, does not kill adult worms only the microfilaria that migrate in tissue. Therefore, treatment must be repeated annually for 5-10 years. Of note, after the diagnosis was discussed with this patient's guardian, his uncle, the uncle reported he, too, had been diagnosed by skin biopsy and treated for onchocerciasis in Africa.

Changing Rates of Parasites Detected During Refugee Health Assessments

Intestinal parasites are highly prevalent among populations around the world. Among the most common helminths are *Trichuris* (whipworm), *Ascaris*, and hookworms. Refugees, who have fled their homes and often have stayed in crowded refugee camps, are at risk of carrying these infections to the United States. The Refugee Health Assessment Program (RHAP) includes stool microscopy to identify parasitic infections and reimbursement for pharmacy charges associated with their treatment.

Treatment of helminths improves health status, including the growth and nutritional status of children. A recent study has focused on empiric treatment of intestinal parasites and the use of broad-spectrum anti-helminth medication. Albendazole has been promoted as such a broad-spectrum drug with activity against many parasites.

Within one year prior to departing for the U.S., refugees undergo a medical screening evaluation. In 1997, the Centers for Disease Control and Prevention implemented an enhanced medical assessment for a population of Somali refugees in Kenya. After the examination of 390 Barawan Somalis revealed 38% to have intestinal parasites, the CDC implemented treatment of all non-pregnant Barawan women and other Barawan refugees over the age of 2 years with albendazole, 600 mg in a single oral dose prior to departure for the U.S.

Subsequently, in May 1999, the CDC initiated empiric treatment of all refugees departing from Sub-Saharan Africa. In Kenya, departing refugees received their treatment from one of two sources: a single physician contracted to perform the medical assessments or the International Organization for Migration (IOM). The IOM also coordinated the medical assessments of refugees departing from elsewhere in Sub-Saharan Africa. The timing and administration of the albendazole by the single physician is unclear. IOM provides treatment at the time of departure for the U.S.; consequently, during the time subsequent to initiation of the albendazole treatment program, about 80% of all refugees from Sub-Saharan African are known to have received treatment.

Recently, the Refugee and Immigrant Health Program (RIHP) analyzed rates of parasite carriage among refugees from Sub-Saharan Africa. During the RHAP, laboratories detected parasites by microscopy of a single stool specimen collected at health assessment clinical sites throughout Massachusetts. Samples were analyzed for 1,444 refugees. Approximately two-thirds of these departed from Kenya, while the remainder came from other countries, particularly West African countries such as Ghana, Ivory Coast, Sierra Leone and Liberia.

Overall, 51% of African refugees had any parasite detected in the stool, many with multiple parasites. Helminths were detected in the stool of 12% and protozoans in the stool of 65%. The following table shows prevalence rates for specific parasites among all African refugees.

Parasite	Prevalence
Ascaris sp.	1%
Blastocystis hominis	30%
Dientamoeba fragilis	2%
Entamoeba histolytica	4%
Giardia lamblia	12%
Hookworm	1%
Hymenolepis nana	2%
Schistosoma sp.	<1%
Strongyloides stercoralis	<1%
Trichuris trichiura	8%

When refugees were assigned to "treatment" (single-dose albendazole) or "no treatment" groups, the profile of parasitic infections was very different. Those presumed to have received albendazole treatment had parasites 43% of the time, compared with 58% of those who did not receive albendazole ($p < .01$). The rates of both helminth and protozoan infections were reduced in the albendazole treatment group. Helminth infections dropped from 21 to 4% while protozoan infections dropped from 76 to 56%. Rates for a few common pathogenic parasites were as follows:

	No Albendazole	Albendazole	Odds Ratio and 95% CI
Ascaris sp	2%	0	.04 (0, .3)
Giardia lamblia	17%	4%	0.2 (.1, .3)
Entamoeba histolytica	3%	<1%	0.1 (.0, .2)
Hookworm	2%	0	.06 (.0, .4)
Trichuris trichiura	13%	<1%	.01 (.0, .1)

In summary, the CDC's program of empiric treatment of African refugees appears to be highly successful in reducing rates of intestinal parasites among refugees resettled in Massachusetts, and presumably throughout the U.S. Of note, while albendazole is not as effective in treatment of protozoan infections, rates of infection with important pathogenic protozoans declined in addition to the anticipated reduction in helminth infections. Given the expected cost savings and reduced morbidity, the program should be an important step toward improving the health status of refugees resettling in the U.S.

Tuberculosis Surveillance Area (TSA) 6

TSA Nurse: Carolyn Harris, RN, BS
Administrative Assistant: Debra Thimas
Outreach: Yin Leung (Quincy area)
Jian Yu (Malden area)

The Division has reorganized from five Tuberculosis Surveillance Areas (TSA) to six regions. The new region, TSA 6 (Suburban Boston), will be served from the Canton Regional Health Office and includes the TB clinical services currently provided at Hallmark Medical Center (Malden), Olympus Specialty Hospital (Braintree), and Brighton Marine Caritas (Brighton).

The Division welcomes Carolyn Harris, who is the Tuberculosis Surveillance Area nurse for this new region. Carolyn comes to the Division from the City of Chelsea, where she was the public health nursing supervisor, responsible for all public health nursing activities, including tuberculosis case management. Prior to working in Chelsea, she was a public health nurse in California.

The Division also welcomes Debra Thimas as the Administrative Assistant in the TSA 6 office. Debra has worked for the Division for several years in the Central Office as clerk for one of our research projects.

Air Disinfection continued from page one
buildings, but this application does little to reduce person-to-person transmission of respiratory infections among occupants of the same room. Self-contained room air filtration machines can provide some protection in rooms, but face constraints similar to ventilation in eliminating room air contaminants.

The third and least familiar air disinfection technology is ultraviolet germicidal irradiation (UVGI). This technology has long been used in laboratories and health care facilities, primarily to control tuberculosis, but a wide range of airborne respiratory pathogens are known to be susceptible to inactivation by UVGI. It can be used in ventilation ducts without the flow resistance of high-efficiency filters, but in ducts it faces constraints similar to ventilation in general, i.e., in reducing room contamination quickly and completely.

A unique use of UVGI is to disinfect air in the upper room, above the occupants' heads. Convection currents generated by body heat slowly moves air into the upper room, displacing air that has been disinfected by exposure to UV lamps irradiating only the upper room. Compared to relatively small filters inducts, efficiency is gained because the entire upper room becomes a large disinfecting chamber. Room occupant exposure to UVGI , which does not penetrate human skin, has no significant short or long-term health consequences. This application of UV is ideally suited for lobbies, dormitories, emergency rooms, and other large occupied spaces. UVGI is not well suited for surface decontamination and does not penetrate paper, so it cannot be used to sterilize envelopes or objects. Ionizing radiation is needed for this purpose, as used in the food industry. However, to the extent that UVGI can inactivate infectious particles in the air, it can provide some beneficial effect for large mail sorting, mail processing or other sites.

Spores are generally relatively resistant to UVGI, compared to viruses, ordinary bacteria, and even TB. There is no published data on the UV susceptibility of anthrax spores, but other similar bacteria that form spores are relatively more difficult to kill with UVGI. However, it would be relatively easy to test harmless surrogate spore-forming bacteria to determine the efficacy of upper room or duct UVGI. The smallpox virus in the airborne state should be highly susceptible to UVGI, although again, there are no published data on the matter. However, like influenza, smallpox transmission can occur both by close contact (droplet spread from mucous membrane lesions and from skin lesions) and by the airborne route (cough-generated aerosols). While close contact may have accounted for most natural smallpox spread in the past, it is far less efficient than airborne spread, presumably the method of choice for bioterrorists. There is every reason to believe upper room and duct UVGI will be highly effective against airborne smallpox. Further laboratory research on safe smallpox vaccine strains would be relatively easy with existing facilities. UVGI in ventilation systems and in the upper portion of large occupied rooms could be an important defense against a smallpox attack, and would have the additional benefit of reducing the spread of many common respiratory pathogens. Although air disinfection is never a substitute for other control measures, it can provide backup protection when properly used for the right pathogens.

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Save The Dates

Regional TB Update

The next regional TB conference will be held at Lahey Clinic in Burlington on Thursday, January 31, 2002. For more information call Mary Mahoney at the Tewksbury TB regional office at 617-727-7908 or 978-851-7261.

The regional TB conference for the southeast region will be on May 30, 2002. For more information call Kelly Letendre at the Southeast TB regional office at 617-727-1440 or 508-947-1231.

Regional TB Today Course

A Regional TB Today course will be held on April 8-10, 2002 at the J. Erick Jonsson Center of the National Academy of Sciences in Woods Hole, Massachusetts. This course is for physicians, nurses and program managers caring for patients with latent TB infection and TB disease or engaged in TB prevention and control activities.

Admission to the course is through application. Applicants from the Northeast region of the US are welcome. For more information, call Kathleen Hursen at 617-983-6974 or Marilyn DelValle at 781-828-7090.

Epidemiology and Prevention of Vaccine-Preventable Diseases Satellite Videoconferences - Noon to 3:30 PM

Part 1 - February 28, 2002
Part 2 - March 7, 2002
Part 3 - March 14, 2002
Part 4 - March 21, 2002
Location: Satellite Videoconference viewing will be at the UMass Medical School Campus at the State Lab Insitute in Jamaica Plain, MA. Satellite courses may be offered at multiple sites throughout the state. For more information, call Walt Lasota at (617) 983-6834, or email him at Walter.Lasota@state.ma.us.

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